

R-3 73-12

BIOLOGICAL EVALUATION  
Western Spruce Budworm  
With Plot DocumentationNational Forest, Indian,  
State, and Private  
Lands

Region 3

1972

Branch of Forest Insect and Disease Management  
Division of Timber Management  
Southwestern Region, USDA, Forest Service  
517 Gold Avenue, SW  
Albuquerque, New Mexico 87101

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## INTRODUCTION

In August of 1972, a survey was conducted to measure western spruce budworm egg masses and current defoliation levels on Douglas-fir so that infestation trends could be established. The survey showed that western spruce budworm populations remained endemic to light throughout Region 3. The trend is for these to remain static, except in the Eagle Nest Unit, where an increasing infestation is expected.

To understand survey design, please refer to section on  
GENERAL INFORMATION and Methodology.  
Insect--Western budworm, Choristoneura occidentalis Freeman

Host--Douglas-fir, Pseudotsuga menziesii (Mirb.) Franco  
White fir, Abies concolor (Gord. & Glend.) Lindl.  
Corkbark fir, Abies lasiocarpa var. arizonica (Merr.) Lemm.  
Blue spruce, Picea pungens Engelm.  
Engelmann spruce, Picea engelmannii Parry

## SAMPLING PROCEDURES AND ANALYSIS

The survey was based on the procedure discussed by McKnight et al. 1970.<sup>1/</sup>

Region 3 was divided into entomological units based on geographic boundaries of current or previous infestations (Fig. 1). Each unit was in turn divided into plots (see Appendix A for plot documentation maps). From each plot, a minimum of 5 trees were sampled by cutting two 24-inch midcrown branches. These samples were bagged and taken to the laboratory for examination.

In the laboratory, current defoliation of Douglas-fir was measured by counting a total of 125 buds from 5 trees on each plot. Buds were classed as either damaged or not, and compared to a table in McKnight's plan for estimating current defoliation on the plot.

The foliage from all branches was examined for egg masses. Those needles with egg masses were removed from the foliage and classed as either old or new by an entomologist. Predicted defoliation classes were determined by comparing the density of new egg masses with a sequential table in McKnight's plan that shows the relationship of egg mass numbers to expected defoliation.

<sup>1/</sup> McKnight, M. E., J. F. Chansler, D. B. Cahill, and H. W. Flake, Jr. 1970. Sequential plan for western budworm egg mass surveys in the central and southern Rocky Mountains. USDA Forest Serv. Res. Note RM-174. 8 p.

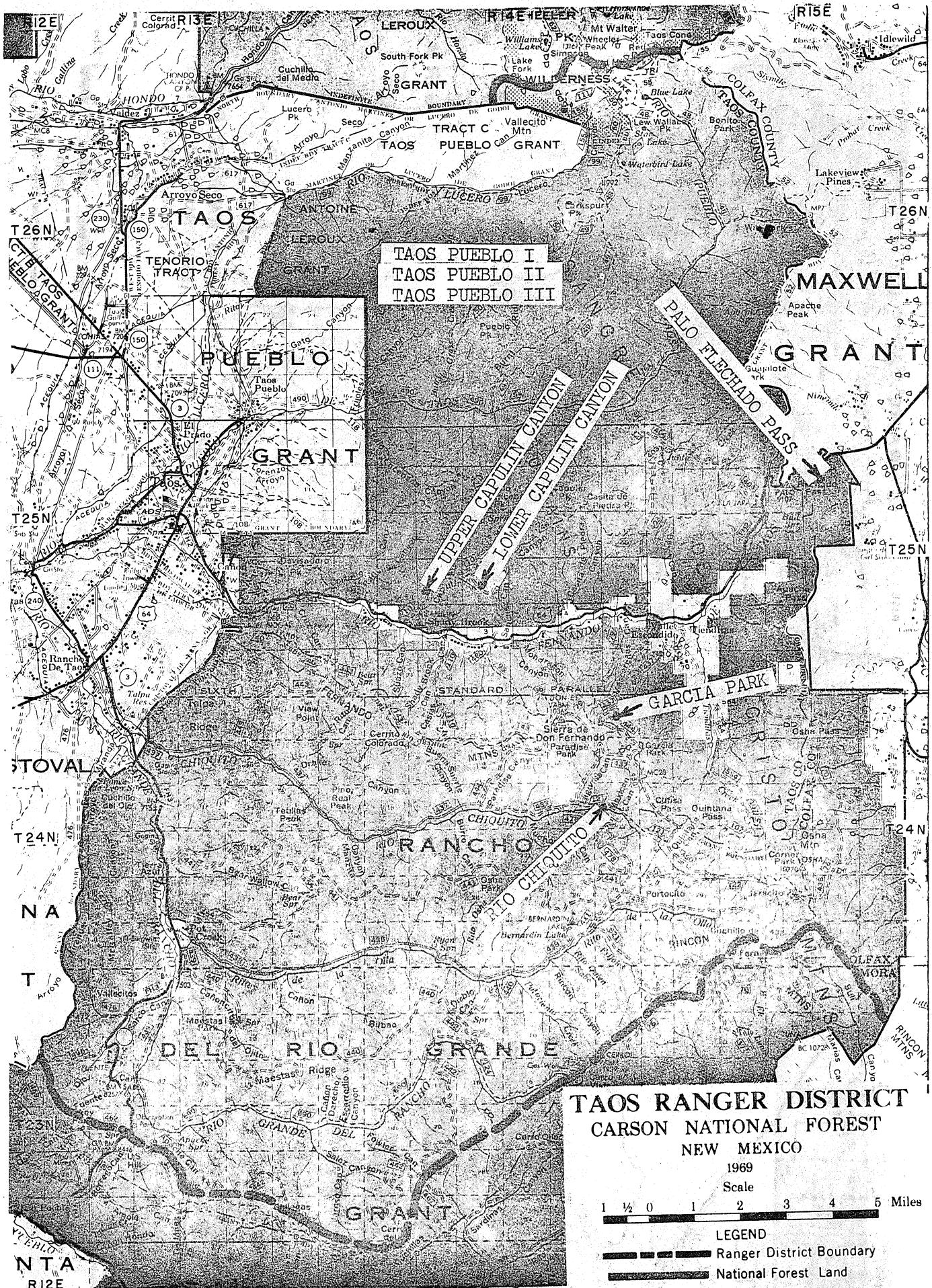


Table 1.--Summary of western budworm egg mass survey data, Region 3, 1972 (con't)

<u>Unit &amp; Description</u> <u>Sample Plot</u>	Total acres of unit	Acres infested	Douglas-fir Percent defoliation 1972	New egg masses per 1,000 sq. in. foliage	predicted defoliation class for Douglas-fir 1973	Infestation trend for unit
<b>Chama Unit (continued)</b>						
San Antonio			7	0.00	Undetectable	
Brazos Box			3	0.00	Undetectable	
Red Hill			16	0.00	Undetectable	
Hopewell			5	Lost in Sampling		Static
<b>Santa Fe West Unit (Western Division of Santa Fe NF)</b>	200,000					
Clara Peak			20	0.00	Undetectable	
Fenton Fork			9	0.00	Undetectable	
Del Norte Pass			13	0.40	Undetectable	
<b>Navajo Indian Reservation Unit</b>	103,000					
Roof Butte Burn			6	Lost in Sampling		
Washington Pass			12	Lost in Sampling		
Roof Butte			8	Lost in Sampling		

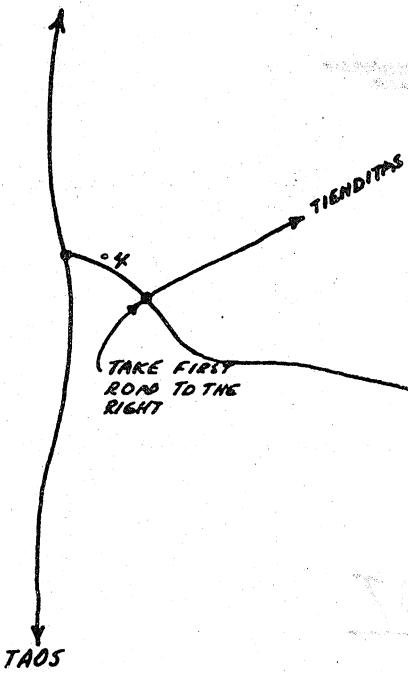
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<u>North Kaibab Unit</u> (North Rim of Grand Canyon NP and Northern Division Kaibab NF)	100,000					
Saddle Mtn. Road			30		Lost in Sampling	
Log Road			22		Lost in Sampling	
Dry Park-Big Saddle Road			10		Lost in Sampling	
<u>Cloudcroft Unit</u> (Lincoln NF)	150,000					
Alamo			22	0.00	Undetectable	
Benson Ridge			14	0.00	Undetectable	
Nelson Canyon			13	0.00	Undetectable	
Upper Sacramento			7	0.00	Undetectable	
Lower Sacramento			8	0.00	Undetectable	
Moore Canyon			6	0.00	Undetectable	Static





EAGLE NEST



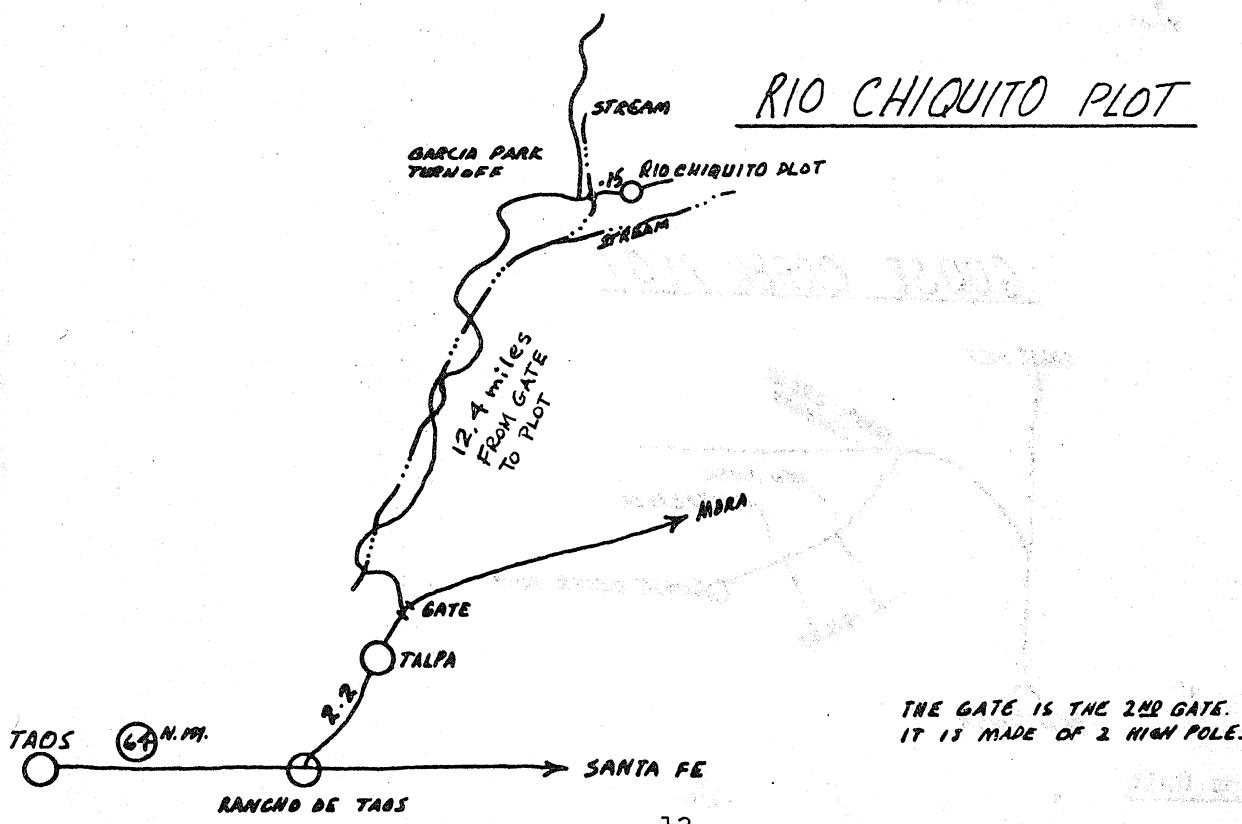
TAKE FIRST  
ROAD TO THE  
RIGHT

### GARCIA PARK PLOT

9.6 MILES

GARCIA  
PARK

PLOT



12.4 miles  
FROM GATE  
TO PLOT

### RIO CHIQUITO PLOT

STREAM

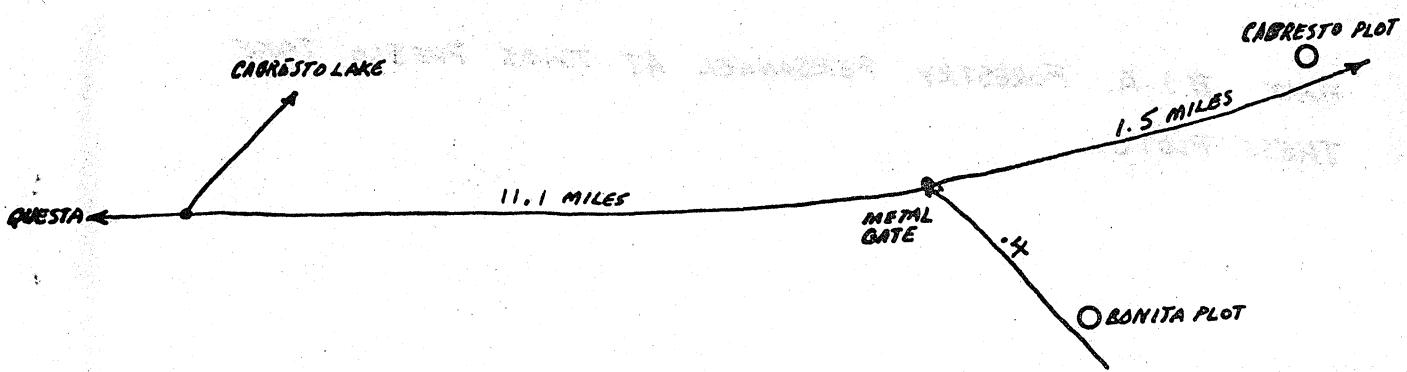
STREAM

RIO CHIQUITO PLOT

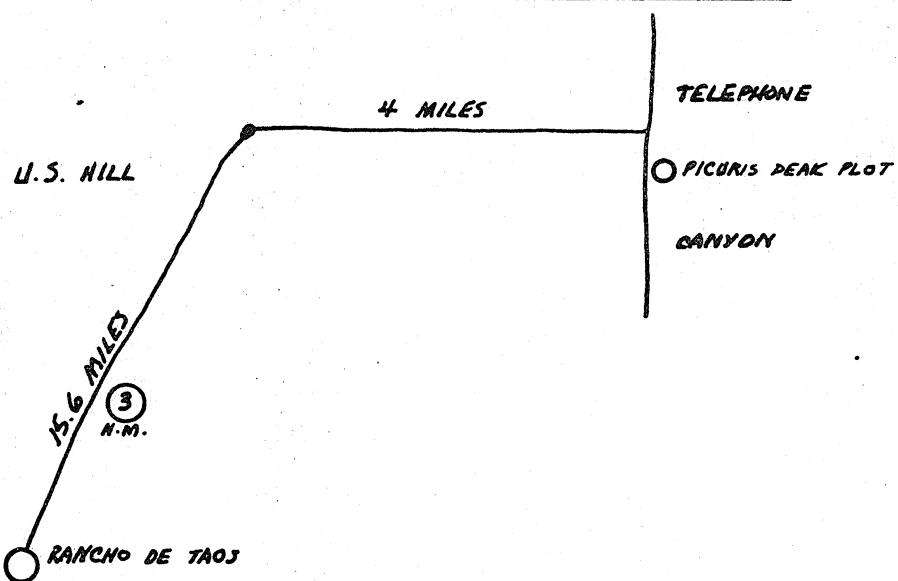
THE GATE IS THE 2ND GATE.  
IT IS MADE OF 2 HIGH POLES

Taos Unit

## BONITA AND CABRESTO PLOTS



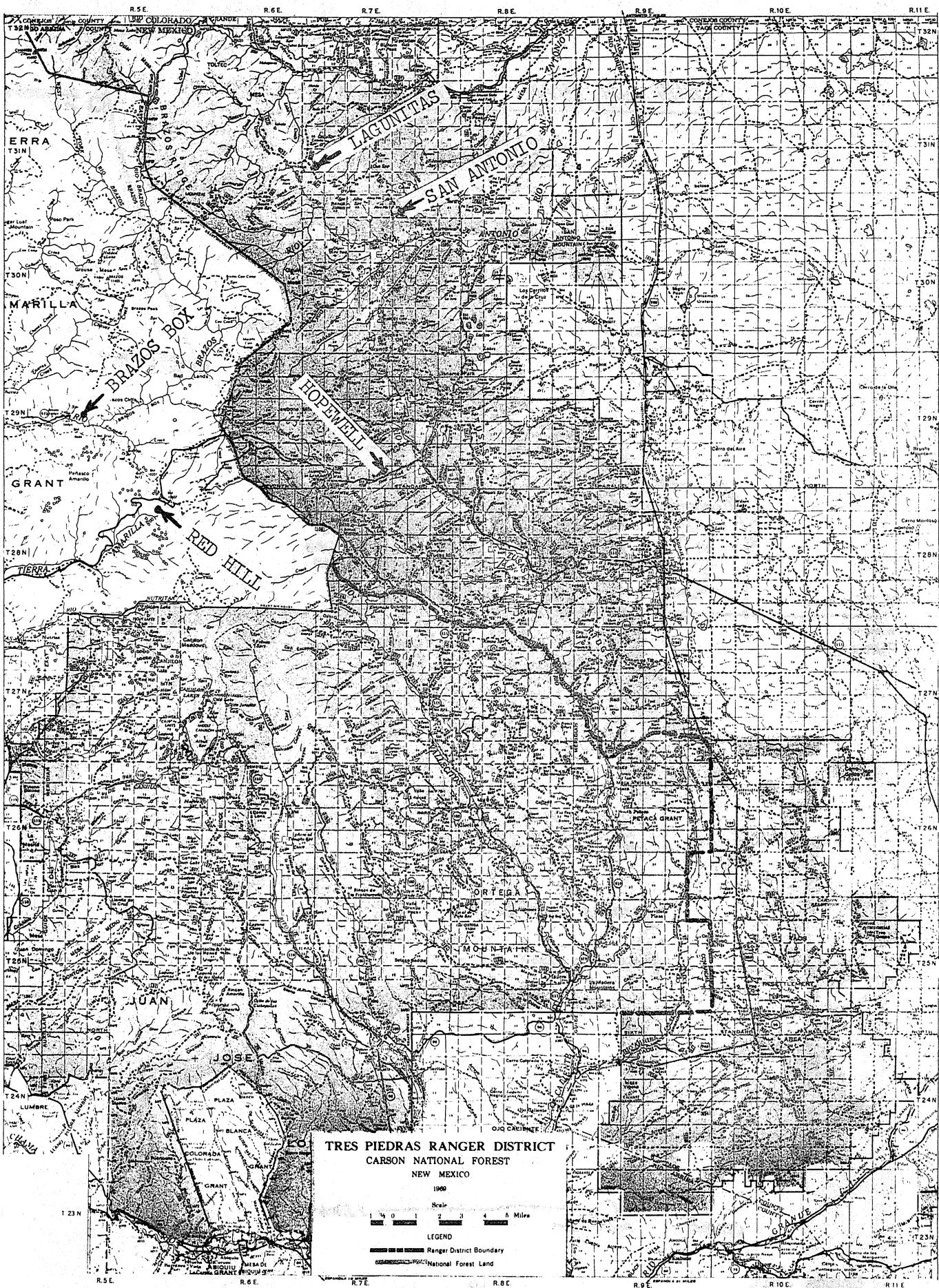
## PICURIS PEAK PLOT



## SAN CRISTOBAL PLOT

HAVE JERRY SANCHEZ OF QUESTA R.D. TAKE YOU IN A 4-WHEEL DRIVE

Taos Unit



TIERRA  
AMARILLA

13.7 MILES

GUARD RAIL  
GUARD RAIL  
NEWLY CUT ROAD BANK  
PLOT SMALL POND

15.6 MILES

RED HILL PLOT

HOPEWELL PLOT

2.8 MILES

HOPEWELL  
LAKE

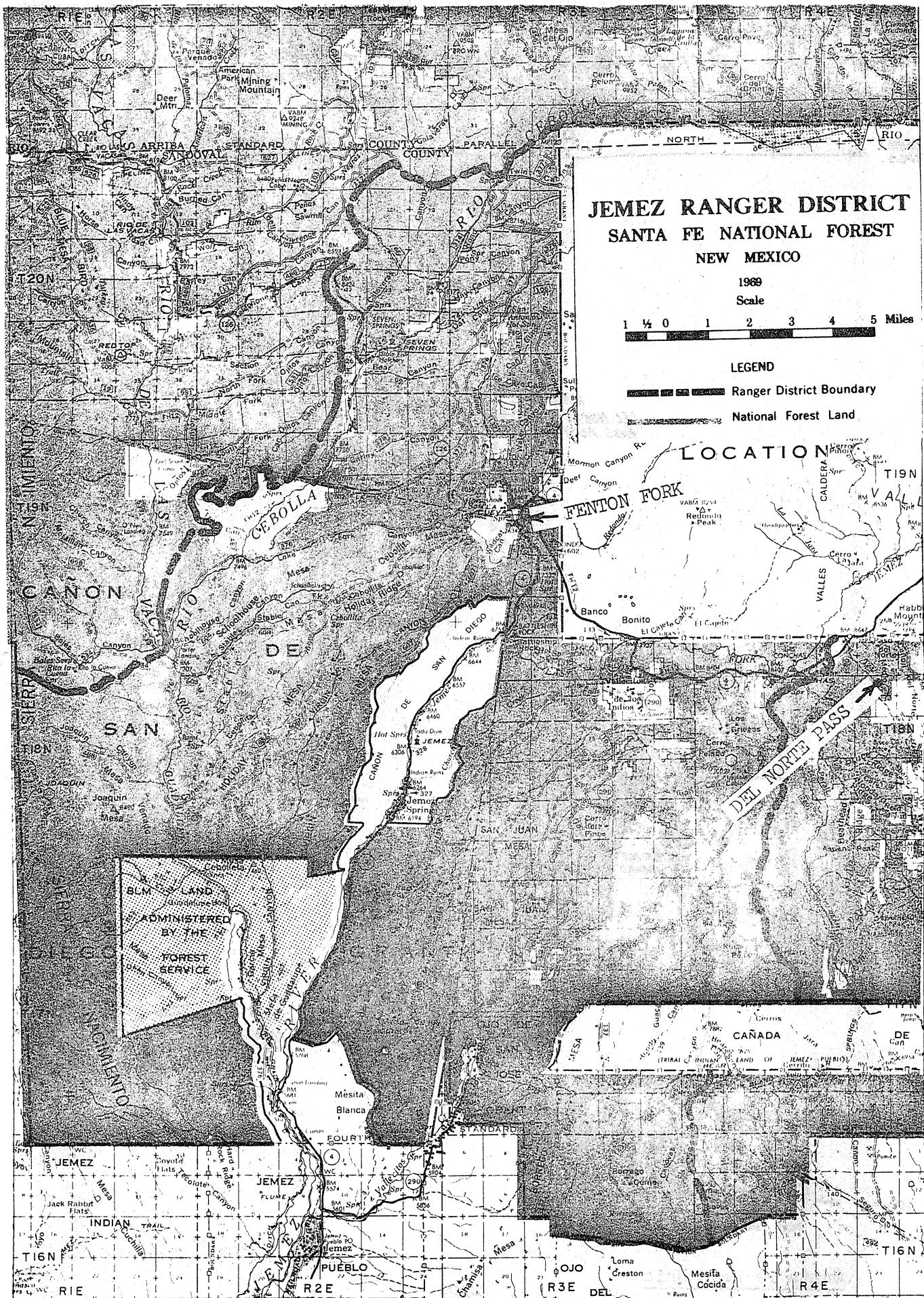
O PLOT

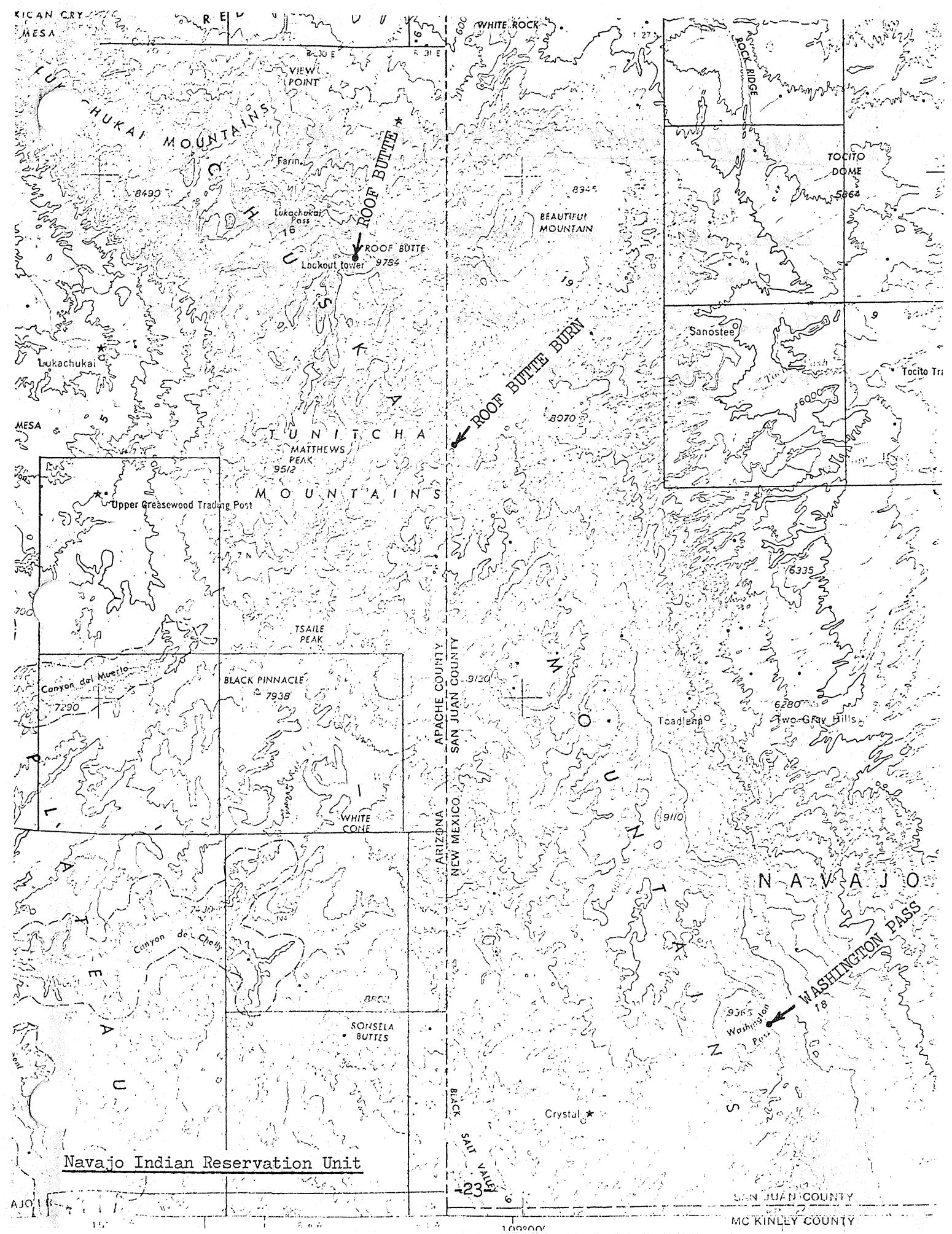
OLD ROAD  
BED

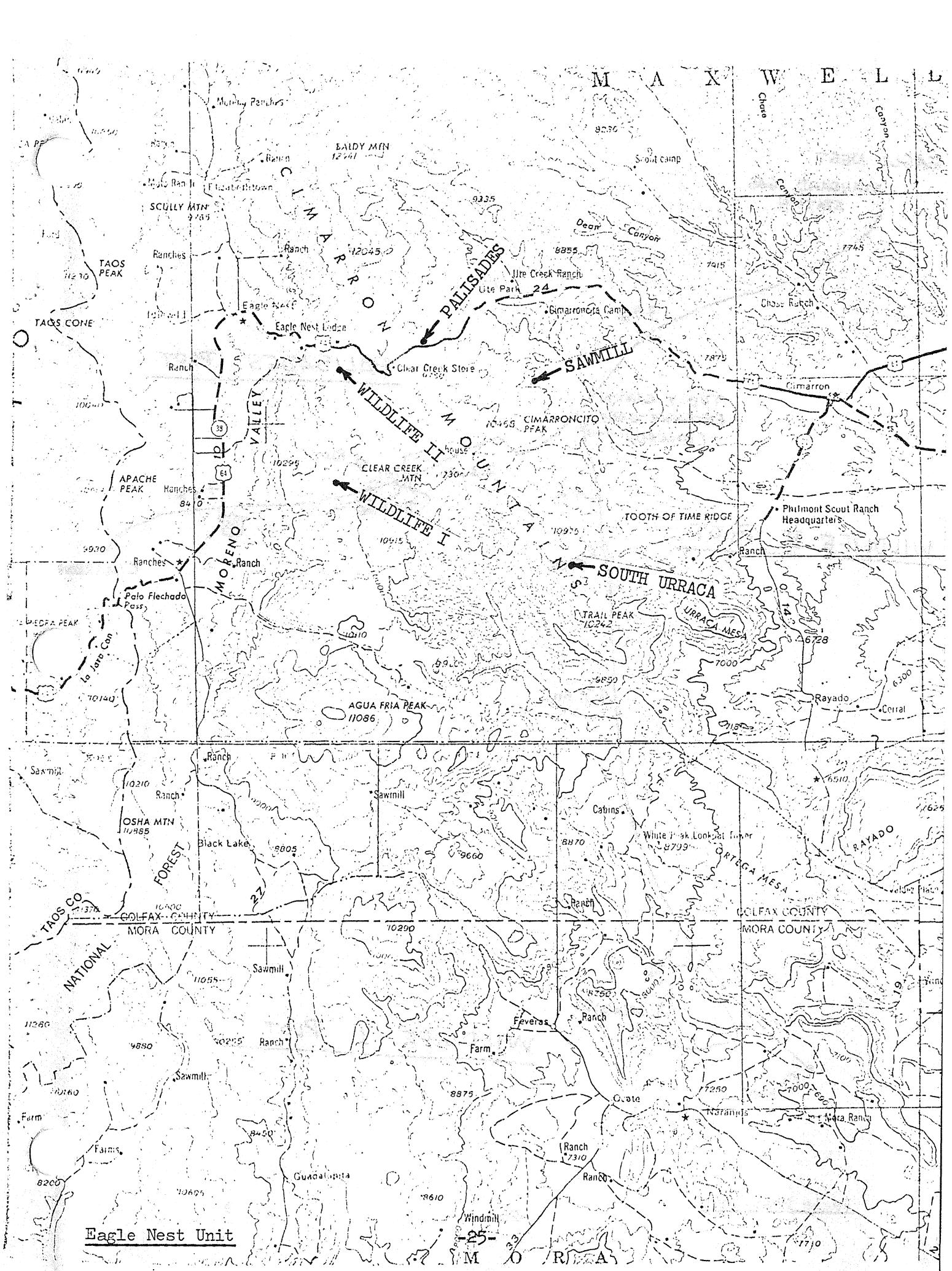
18.8 MILES

Chama Unit

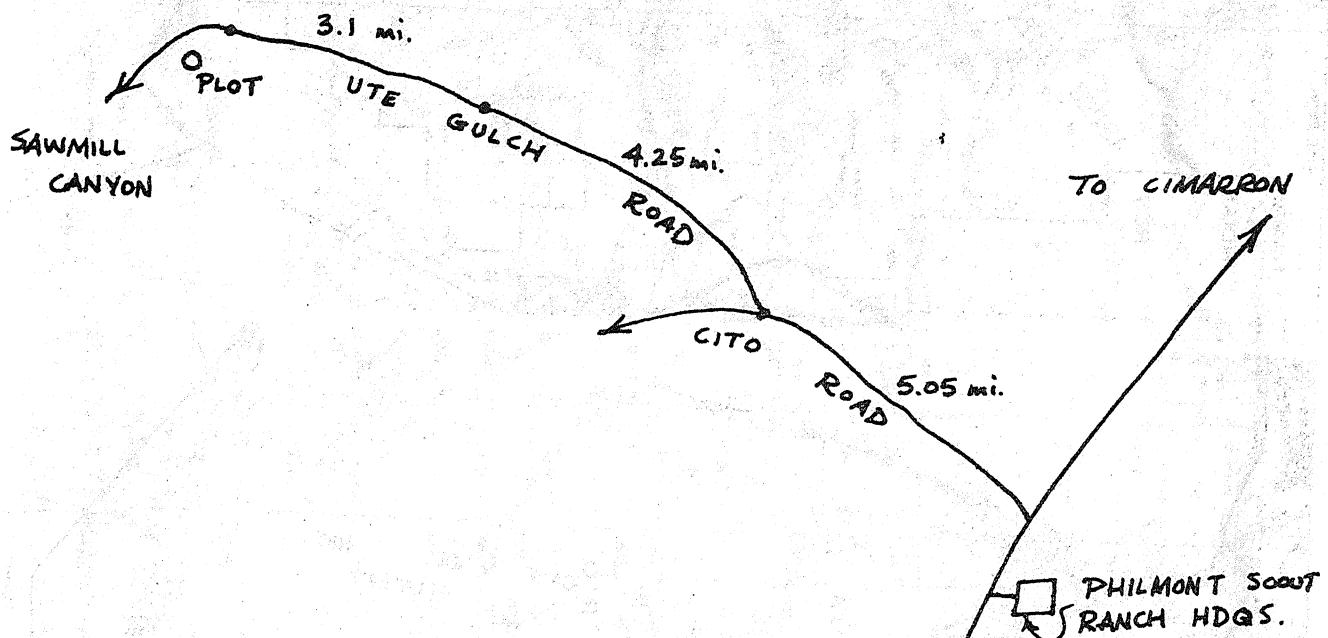
335  
TRES  
PIEDRAS



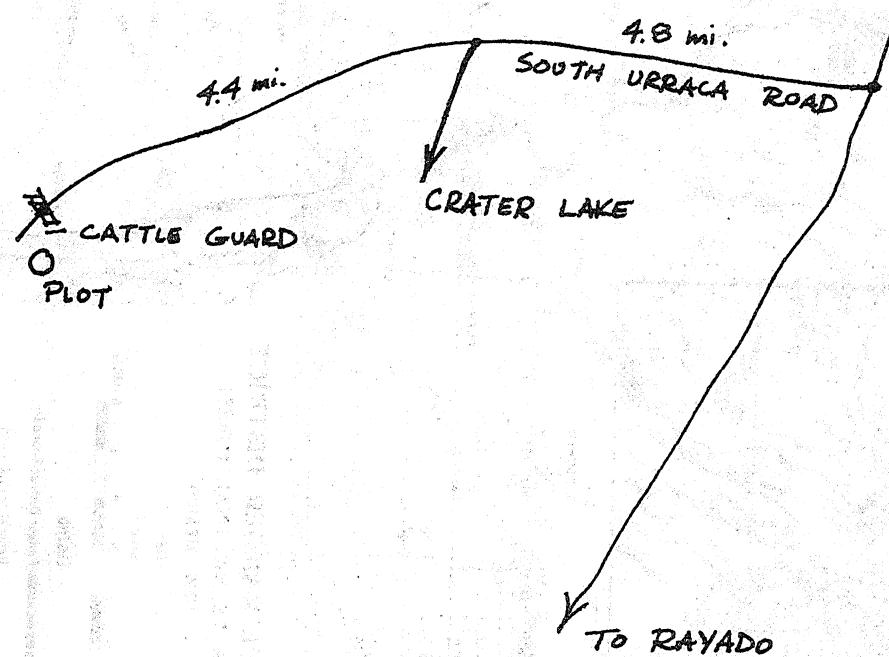




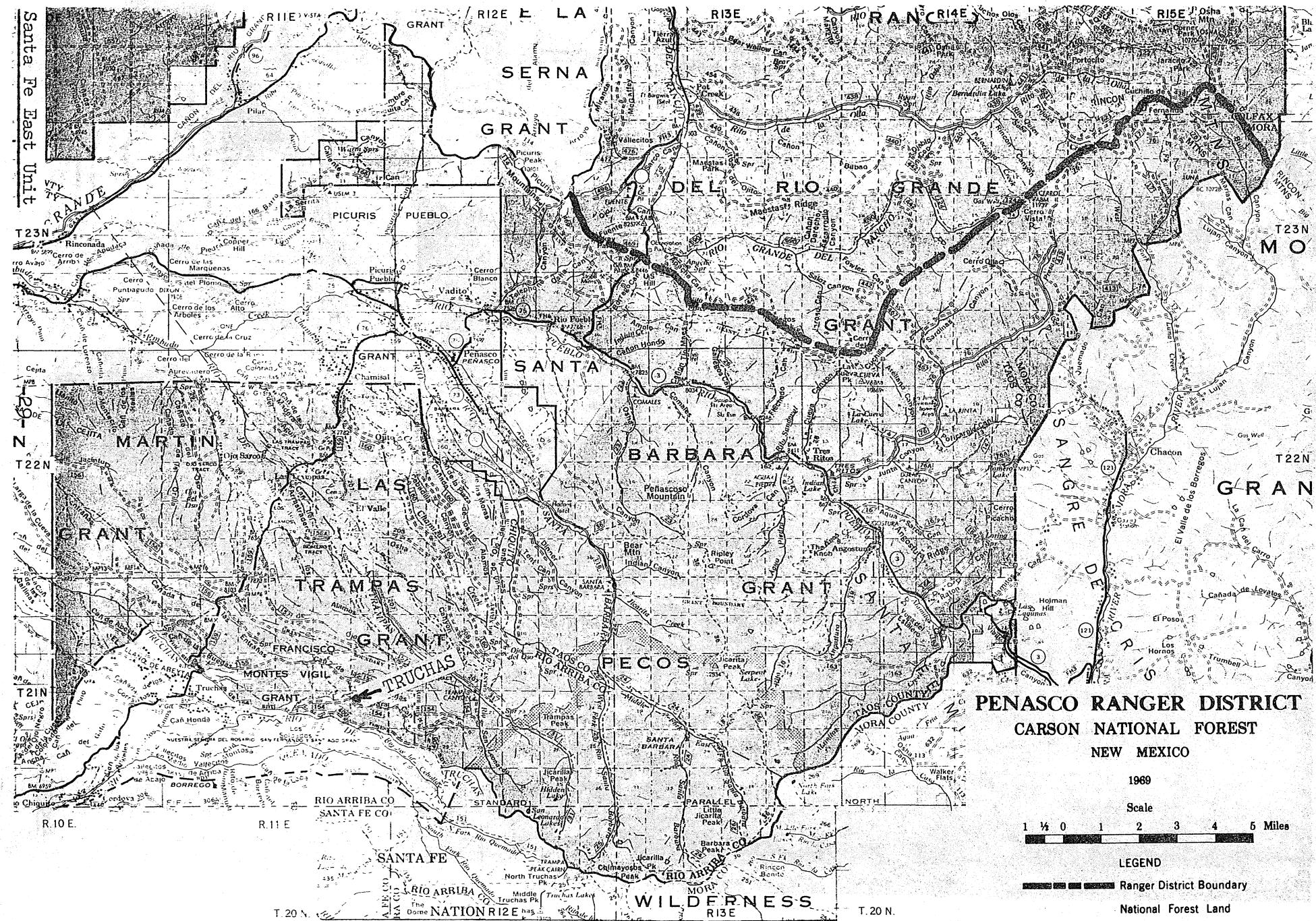
## SAWMILL CANYON PLOT



## SOUTH URRACA PLOT



Eagle Nest Unit



### ASPEN VISTA PLOT

TO SKI LIFT AT  
SANTE FE  
BASIN

HWY. MILEAGE SIGN 13  
(GREEN IN COLOR)

PLOT

4.5 mi.

1.5 mi. HYDE PARK  
S F.S. SIGN

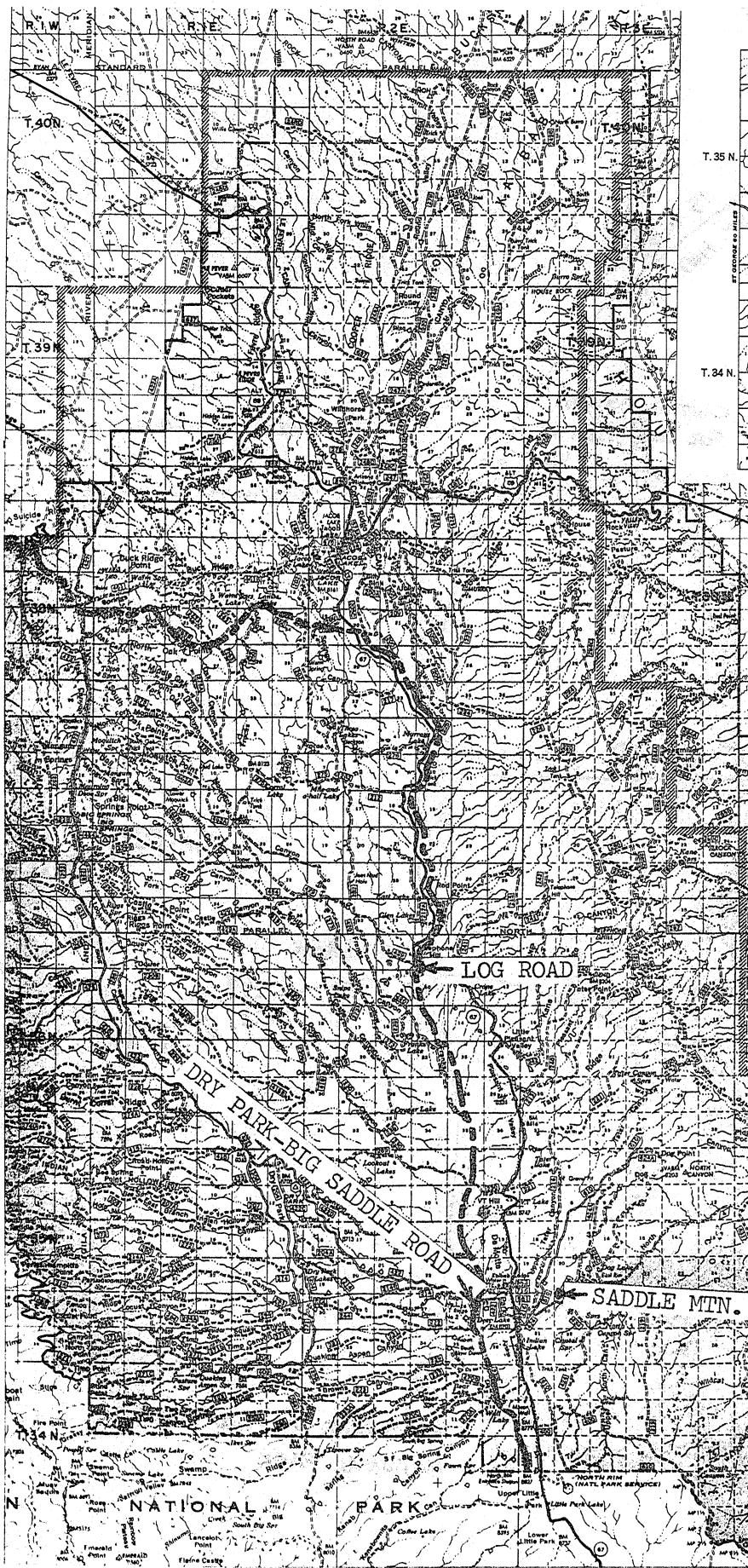
BLACK CANYON  
PICNIC AREA HYDE PARK  
SIGN

0.3 mi. 3 chns.  
PLOT

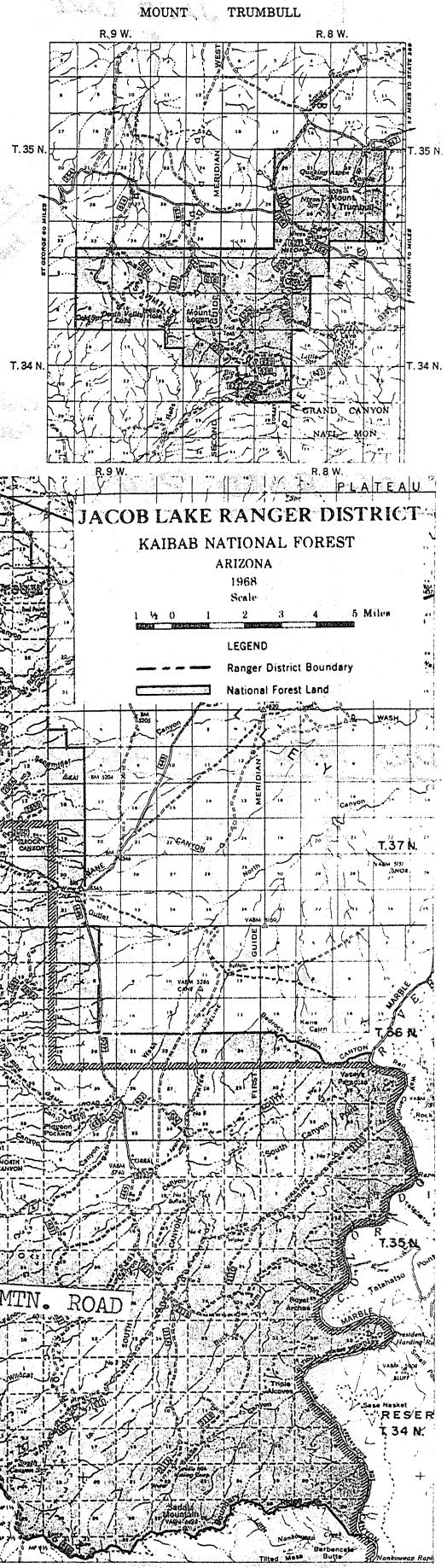
### BLACK CANYON PLOT

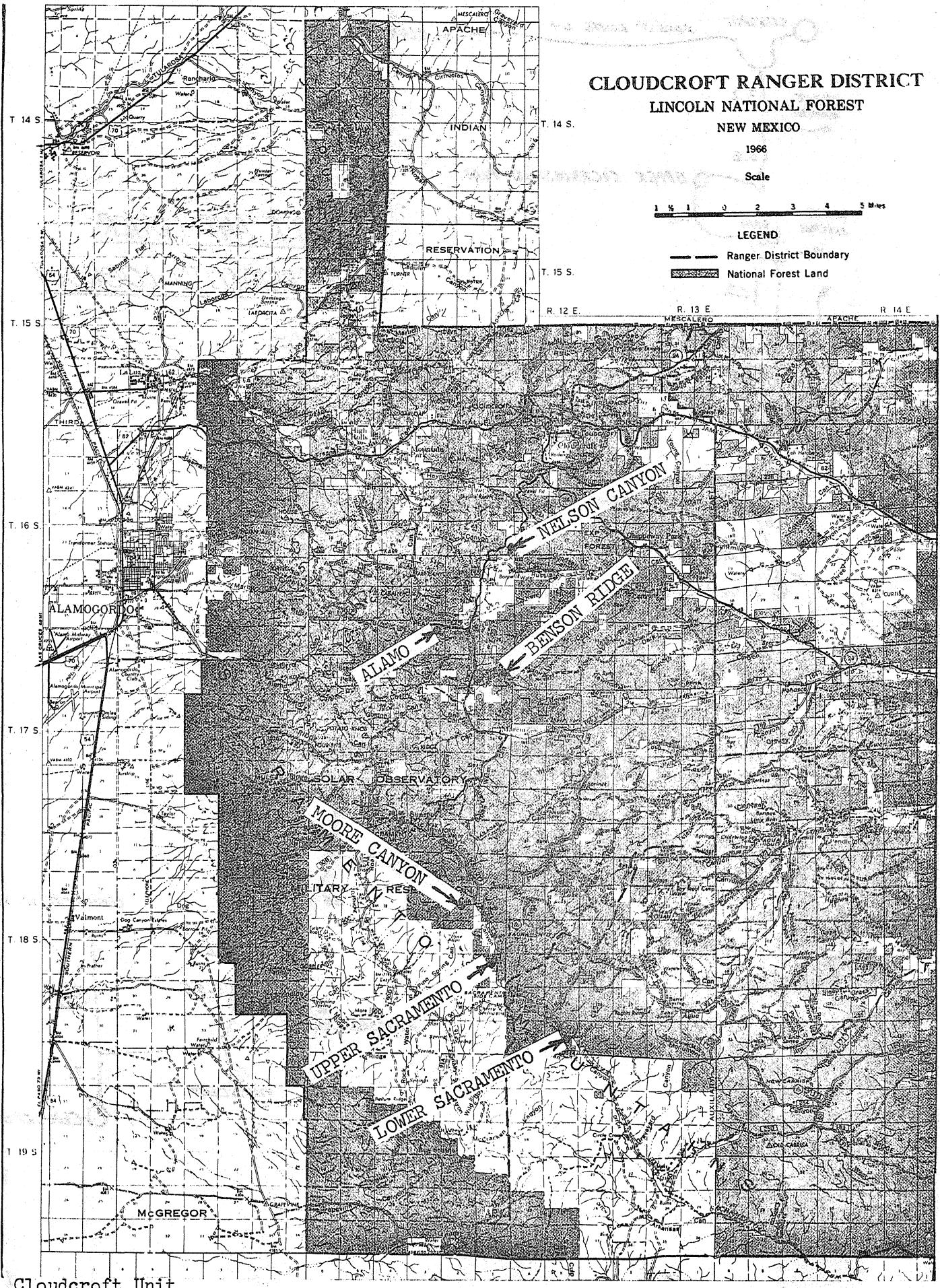
TO SANTE FE

Sante Fe East Unit



North Kaibab Unit





## BENSON RIDGE

ALAMO

NELSON CANYON

PLOTS

2.4

STATE 24

3.65

NELSON CANYON SIGN

NELSON CANYON PLOT

FOREST ROUTE 64

3.05

BENSON RIDGE  
PLOT

2.35

ELECTRICAL EQUIP.

.8

.4

ALAMO PLOT

— x — x — x — FENCE

## MOORE CANYON PLOT

FOREST ROUTE 64

3.2 MILES  
SUC RD.

PLOT

SWAMP

CATTLE GUARD &  
MOORE CANYON SIGN